8 LAND USE, SOCIAL, AND ECONOMICS ISSUES

8.1 AGRICULTURAL LAND AND WATER USE

8.1.1 Summary

Agricultural resources are an important feature of the existing environment of the State, and are recognized and protected under CEQA and state policy. One of the major principles of the State's environmental and agricultural policy is to sustain the long-term productivity of the State's agriculture by conserving and protecting the soil, water and air which are agriculture's basic resources. It is CALFED policy that adverse environmental effects to agricultural resources resulting from CALFED programs, projects and actions will be fully assessed and disclosed under CEQA, and avoided or mitigated as required by CEQA. Assessment, disclosure, and avoidance and other mitigation strategies shall be developed at the programmatic and project-specific levels in consultation with other state, federal and local agencies with special expertise or authority over agricultural resources which may be affected by the project, such as CDFA (California Department of Food and Agriculture).

Implementation of the Preferred Program Alternative would result in a number of impacts, both positive and negative, to agriculture in the Delta and Central Valley. Benefits to agriculture from the Preferred Program Alternative include: greater assurance of water supply reliability; higher crop yields and greater crop flexibility in some areas; protection of Delta farmlands from inundation due to levee failure and from salinity intrusion; and, long-term protection of farmlands in the face of rising water costs, through greater efficiency. Adverse impacts resulting from the Preferred Program Alternative would include: conversion of agricultural lands to habitat uses; loss of agricultural lands due to new storage and

AGRICULTURAL LAND AND WATER USE

- The **Ecosystem Restoration Program** could improve reliability of water to agricultural lands. The program would convert agricultural land to habitat.
- The **Water Quality Program** could significantly benefit agricultural land. Long-term benefits include reduced production costs, higher crop yields, and greater crop selection flexibility. Adverse impacts would result from conversion of lands in drainage problem areas.
- The **Water Use Efficiency Program** is not expected to directly affect land or water. However, water use efficiency measures may alter crop patterns.
- The **Levee System Integrity Program** would provide greater protection to Delta farmland from inundation and salinity intrusion. However, construction of levees would remove agricultural lands from production.
- **Water Transfers** could adversely affect agricultural land and water use at the source of the transferred water, and benefit agricultural land and water use in water-receiving regions.
- **Coordinated Watershed Management** could alter some land use practices in the upper watershed.
- **Storage and Conveyance** facilities could increase the amount of water available for agricultural production. Storage and conveyance would convert prime farmland and other agricultural lands, and create potential conflicts between proposed actions and regional agricultural land use plans and policies.

  Changes in operations to protect fishery resources may affect agricultural land and water use, depending on the magnitude and timing of the change.

conveyance improvements built in the Delta, Sacramento River, and San Joaquin River Regions; reduction of irrigated acreage to due to increased water costs; and reduction of irrigated acreage in localized areas due to water transfers.

Ecosystem Restoration. The long-term benefits of the Ecosystem Restoration Program include improved water supply reliability. The habitat protection and enhancement done through this program will reduce future water supply impacts from additional supply disruptions, and from listing of additional species. Potentially significant impacts resulting from the implementation of the program include the conversion of agricultural land. Loss of agricultural land, including prime, statewide and unique farmland, would constitute a significant land use impact. Ecosystem Restoration Program activities are not anticipated to significantly affect agricultural land uses in the Bay Region or in the SWP and CVP Service Areas Outside the Central Valley. ERP actions could adversely impact ag water supply reliability locally for the export areas due to salinity reductions.

Water Quality. The potential long-term benefits of the Water Quality Program include reduced production costs, higher crop yields, and greater crop selection flexibility. A short-term implementation cost is associated with best management practices (BMPs) for improved water quality, which could be offset by long-term savings via higher crop yields and additional cropping pattern opportunities. Potentially significant adverse impacts resulting from implementation of the program include reduced agricultural productivity due to changes in agricultural practices; increased production costs associated with program implementation; and changes in the quantity or pattern of stream flow, which could affect downstream agricultural water users. Implementation of a program to idle lands with drainage or water quality problems could affect up to 45,000 acres of agricultural land in the San Joaquin River Region. (70,000?) ?

Water Use Efficiency. The Water Use Efficiency Program is not anticipated to directly affect land use. However, implementation of the program may result in indirect impacts on agricultural land use. Agricultural land may be removed from production because of increased costs and decreased profitability, which could result from required efficiency improvements or increased district water charges (for example, as part of tiered water pricing). Conversely, improved efficiency may allow the continued viability of agriculture in some areas. Efficiency improvements that result in greater water supply reliability but also higher annual cost may cause a shift in the types of crops grown. Removal of agricultural land from production is a potentially negative impact associated with the program. Improvement in the long-term viability of some agricultural lands is a potentially beneficial impact.

Levee System Integrity. The benefits of the Levee System Integrity Program include greater protection of existing Delta farmland from inundation and salinity intrusion. The conversion of prime farmland is a potentially significant adverse land use impact resulting from implementation of the program. The program primarily would affect agricultural land uses in the Delta Region (up to 35,000 acres) and would not affect land uses in the other four regions. ? Sac R or SJV X

Water Transfers. Water transfers are not expected to directly affect land use; however, transfers could affect agricultural lands by making sales of water more attractive than irrigation, resulting in idling of croplands in localized areas.

Coordinated Watershed Management. Potential watershed activities would be compatible with the applicable environmental and land use plans and policies in the affected jurisdictions. Reduced grazing activities could result in potentially significant land use impacts if reduced grazing results in a loss of agricultural productivity.

Storage and Conveyance. During construction of reservoirs, dams, conveyance canals, pumping-generating plants, and other related facilities, access to and around the project area would be temporarily disrupted. The disruption to local land uses would include increased truck traffic on local roads. The greatest disturbance would occur during the excavation phase of reservoir construction. Converting prime agricultural land to nonagricultural uses also is considered a significant unavoidable impact.

It is anticipated that storage and conveyance facilities and improvements would benefit agricultural water users in the Bay Region, the Sacramento River Region, the San Joaquin River Region, and the SWP and CVP Service Areas Outside the Central Valley.

Groundwater storage projects could adversely affect nearby agricultural operations by overpumping groundwater in dry years. Conversely, groundwater storage projects would tend to provide beneficial impacts to nearby agricultural operations in most years by keeping groundwater levels recharged and less expensive to pump.

Changes in operations to protect fisheries could affect agricultural land and water use. The significance of the effect depends on the magnitude and timing of the operational changes.

The land and water use impacts on agricultural resources are summarized in ***Table 8.1-1 of the 3/16/98 Draft Programmatic EIS/EIR***. → where's the discussion?

8.1.2 Areas of Controversy

p — Summary - 15 23 *

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No Areas of Controversy, as defined by CEQA, exist for this section. While certainly many of the issues discussed in this section are controversial, the impacts are clearly understood, and have not generated scientific or expert disputes on the nature of impacts among differing viewpoints.

8.1.3 Affected Environment/ Existing Conditions: Agricultural Land and Water Use

8.1.3.1 All Regions

The CALFED study area represents an important agricultural region for both California and the United States. California is the most diversified agricultural economy in the world, producing more than 250 crop and livestock commodities. The study area encompasses approximately 85 % of total California irrigated land, covering all or portions of 39 of the 58 counties in California. In 1995, the 39 counties together contributed about 95 % of California's agricultural production value and represented nine of the top ten agricultural counties in California and seven of the top ten counties in the nation. Agriculture in the study area is also an important employer and affects the regional economy through the expenditures of farmers and the processing and transportation of crops harvested.

Between 1920 and 1950, irrigated agriculture development increased rapidly from 2.7 million acres to over 4.7 million acres for the entire Central Valley. other areas?

Existing Conditions

X

Agricultural Land Use. The Natural Resources Conservation Service (NRCS) and California Department of Conservation (DOC) distinguish among four basic designations of farmland: Prime Farmland, Additional Farmland of Statewide Importance, Unique Farmland, and Additional Farmland of Local Importance. DOC adds a designation of Grazing Land. Prime and Additional Farmland of Statewide Importance may currently be used as cropland, pastureland, rangeland, forest land, or other land but not as urban land or water.

Prime Farmland is land best suited for producing food, feed, forage, fiber, and oilseed crops, and also is available for these uses. Prime Farmland has the soil quality, growing season, and moisture supply needed to produce sustained high yields or crops economically when treated and managed (including water management) according to modern farming methods.

Farmland of Statewide Importance is land other than Prime Farmland with a good combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and also is available for these uses.

Unique Farmland is land other than Prime and Additional Farmland that currently is used for the production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality and/or high yields of a specific crop when treated and managed according to modern farming methods. Examples of such crops are citrus, olives, avocados, fruit, and vegetables.

Additional Farmland of Local Importance is land used for the production of food, feed, forage, fiber, and oilseed crops, even though these lands are not identified as having national or statewide importance. These lands are identified by a local committee made up of concerned agencies that review the lands under this category on at least a 5-year basis.

Grazing Land is similar to Farmland of Local Importance, but is grazed by cattle or sheep rather than being used for crops.

Table 8.1.1-1 of the Draft Programmatic EIS/EIR shows estimated totals of 1996 important farmland acreage based on information from DOC, Farmland Mapping and Monitoring Program for counties within the Central Valley. The numbers are estimates of important farmland acreage (including prime and unique farmland and farmland of local and statewide importance) in the Delta, Sacramento River, and San Joaquin River Regions, the regions where important farmland is most likely to be affected. (It is important to note that several of the counties in the study area have not been completely surveyed by DOC for important farmland and that these summaries have been approximated. For a detailed discussion of the Farmland Mapping and Monitoring Program and acreages by county, visit DOC's internet website at http://www.consrv.ca.gov/ olc/farmland.html.)

Table 8.1.1-2 of the Draft Programmatic EIS/EIR identifies approximate acres in irrigated agriculture for each of the five CALFED regions. ***[[Note that this table has been revised per the 9/30 errata and will be assigned a new number for this revision. Revised table follows.]]***

Agricultural Water Use. Agriculture in the five CALFED study regions receives irrigation water from the CVP, the SWP, local water rights and water projects, and groundwater. Most of this water is delivered to farmers through irrigation districts and other water agencies. The availability and reliability of supply of high quality water limits the productivity of important farmlands.

Table 8.1.1-3 of the 3/16/98 Draft Programmatic EIS/EIR provides agricultural water use and **water pricing in all CALFED regions from 1985 to 1990.**

Central Valley Project. The CVP supplies about 30% of total agricultural water use in the study area. Most CVP water is delivered to the Central Valley counties in the Sacramento River Region and the San Joaquin River Region. CVP water is delivered to approximately 250 water districts, individuals, and companies through water service contracts, Sacramento River water rights, and San Joaquin River exchange contracts. The terms "water service contract" and "project water" refer here to water developed by the project and delivered pursuant to repayment and water service contracts. CVP exchange contracts and Sacramento River water rights represent water rights that predate the CVP.

State Water Project. The SWP supplies about 10% of total agricultural water use in the CALFED study area. Through contracts with 29 water agencies, the SWP provides water within the Central Valley to Butte, Solano, Kings, and Kern counties; outside the Central Valley to several southern California counties; to Alameda and Santa Clara counties in the south Bay Area; and to Napa and Solano counties in the north Bay Area. In addition, the SWP provides water rights deliveries to water rights holders along the Feather River (Butte and Plumas counties).

Local Surface Water. Local surface water supplies (those not delivered by either project) provide about 40% of all agricultural water supplies in the study area. More local surface water supplies are available on the east side of the valley because of the larger amount of precipitation in the Sierra Nevada. Locally owned water projects are especially important on the Yuba, Stanislaus, Tuolumne, Kings, and Merced Rivers; but local sources on the west side like the federal Solano Project also are important.

Groundwater. Groundwater provides a significant supply of water for agriculture in normal years, and it is often used to reduce or eliminate shortages of surface water supplies during drought. On average, groundwater provides about 20% of total agricultural water use in the study area.

Declining groundwater tables, subsidence, and loss of aquifer storage continue to be costly problems, particularly in the western and southern parts of the San Joaquin River Region and the Bay Region, where less surface water is available. Declining groundwater tables increase pumping costs. The costs of subsidence include damage to structures, failure of well casings, and frequent surveying. Water from the CVP and SWP had replaced some of the groundwater pumping, and withdrawals were about equal to estimated recharge. However, the recent drought and supply restrictions imposed by the CVPIA of 1992, the Bay-Delta Accord, and Biological Opinions have reduced surface water supplies and renewed the past trend of groundwater depletion throughout the valley.

Agricultural Habitats. Croplands, orchards, and vineyards have been developed on some of the state's most fertile soils. Soils supported a much greater diversity of native species and productive natural habitats historically than they do today. Many wildlife species have adapted to areas now converted to cropland. Wintering waterfowl and shorebirds consume ~~waste~~ fallowed grains left in fields after harvest, and use fields flooded for weed control, leaching, and creation of seasonal wetlands. For a more detailed discussion of the types and value of agricultural habitats and seasonal wetlands, see the "Vegetation and Wildlife" section of Chapter 7, and the Ecosystem Restoration Program technical appendix.

→ Water Right - Riparian, Pre-1914, appropriative, contractual

8.1.3.2 Delta Region

Region where largest ERP/Level impacts will result

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Historical Perspective. Agriculture in the Delta Region began in the mid-1800s, consisting primarily of dryland farming or irrigated agriculture from artesian wells, groundwater pumping, and creek side diversions Extensive Delta development began in late 1850, when the Federal Swamp Land Act promoted converting swamp and overflow lands to agricultural production. During the early 1900s, a series of leveesand human-made waterways were developed to enhance future agricultural and urban development.

Between 1976 and 1993, the total amount of agricultural land in the legal Delta was reduced by about 14,500 acres, almost all of which occurred in the Delta Secondary Zone. This was largely due to conversion of agricultural land to urban uses in the Brentwood and Oakley areas of Contra Costa County, the Pocket area in Sacramento County, the West Sacramento area in Yolo County, and the Stockton and Tracy areas in San Joaquin County.

Existing Conditions

Agricultural Land Use. Today, of the nearly 750,000 acres in the legal Delta, about 500,000 acres are rich farmland. Most of this area is classified as prime farmland, stateside-important farmland, unique farmland, and locally important farmland, or as having high statewide significance for agricultural production. The Delta's rich peat and mineral soils support several types of agriculture (DWR 1993b).

Agricultural Water Use. Most agricultural water users in the Delta are private water right holders. Local water rights water accounts for over 85% of the total irrigation water use. Other irrigation water sources in the Delta Region are CVP water and groundwater, each accounting for about 5 to 10% of the total agricultural water uses. Between 1985 and 1990, compared with other parts of California, the cost of water was much cheaper in the Delta Region because of large amounts of local riparian and pre-1914 appropriate water rights

These are most secure water supplies that are associated w/ the land, if land is converted, so is supply. New supplies not as secure or as cheap.

8.1.3.3 Bay Region

Historical Perspective. As is characteristic of all the CALFED study regions, agriculture in the Bay region expanded greatly during the Gold Rush of 1849. As more people arrived in California and urban development flourished along the Bay and upon lower watershed areas, more land in the upper watersheds was brought into production. Although the number of farms between the end of World War II and the mid-1960s declined, the number of irrigated acres increased by 25%, with the average farm containing 51 acres (CALFED 1997). Orchards were by far the most important crop in the Bay Region, followed by vegetables and other truck crops (such as melons, potatoes, and garlic). Other crops included alfalfa, sugar beets, and field crops. Prior to the 1940s, land uses in the Bay Region were principally urban in the city of San Francisco and rural in other portions of the region. Over the last 50 years, however, land uses throughout the region have become progressively more urbanized.

Existing Conditions

Agricultural Land Use. Approximately 240,000 acres of irrigated agricultural land remain in production, most of which are in Contra Costa, Solano, and Sonoma counties.

Agricultural Water Use. Over 75% of irrigation water sources in the Bay Region are from groundwater pumping. Local water and project water make up the other 25%. Groundwater extractions commonly exceed groundwater replenishment, therefore, many of the region's aquifers are experiencing overdraft conditions (DWR 1994).

Between 1985 and 1990, the average cost of surface water in this region is estimated at $15-$45 per acre-foot, which is about the average in California. The cost of groundwater in the Bay Region is much higher ($60-$130 per acre-foot) compared with the Delta and Sacramento River Regions.

Relate land & water supply/security of rights. ✓

8.1.3.4 Sacramento River Region

Historical Perspective. Rice was the most important crop in the Sacramento River Region, accounting for 30% of the total irrigated acres. Almost 90% of California rice crops were grown in this region during the 1946 to 1950 period. The next important crops in the Sacramento River Region were irrigated pasture and orchards, each accounting for 20% of the total irrigated acres.

Existing Conditions

Agricultural Land Use. Land uses in the Sacramento River Region are principally agricultural and open space, with urban development focused in the city of Sacramento. More than half the region's population lives in the greater metropolitan Sacramento area. Other fast-growing communities include Vacaville, Dixon, Redding, Chico, and various Sierra Nevada foothill towns. Urban development has occurred along major highway corridors in Placer, El Dorado, Yolo, Solano, and Sutter counties, and has taken some irrigated agricultural land out of production. Suburban ranchette homes on relatively large parcels surround many of the urban areas, and often include irrigated pastures or small orchards.

Urban land, not ag. ✓

Excluding the legal Delta portion of the Sacramento River Region, in 1994 there were approximately 2.2 million acres of important farmland mapped in the Sacramento River Region.

✓ 1/2 of

Agricultural Water Use. About 40% of irrigation water sources in the Sacramento River Region are from local water rights or local water projects. CVP project water and groundwater each makes up the rest of the total agricultural water uses. The 30% of the region's lands that are irrigated with groundwater generally have a very reliable supply.

The majority of diverters along the Sacramento and Feather Rivers existed before major CVP and SWP reservoirs were built. Between 1985 and 1990, the average cost of surface water in this region is estimated at $0-$15 per acre-foot, among the lowest costs in California. The cost of groundwater is estimated at $30-$60 per acre-foot, also among the lowest in the state.

8.1.3.5 San Joaquin River Region

Historical Perspective. Between 1946 and 1950, in terms of irrigated acres, cotton and grains were the most important crops in the San Joaquin River Region, accounting for 22% and 20% of the total irrigated acres, respectively. The next important crops in the San Joaquin River Region were irrigated pasture, alfalfa and grapes, each accounting for about 15% of the total irrigated acres. Almost 100% of California cotton and 90% of California grapes were grown in this region during the 1946 to 1950 period.

Prior to the 1960s, land uses in the San Joaquin River Region were principally agriculture and open space, with urban uses limited to small farm communities. Although agriculture and food processing are still the region's major industries, expansion from the San Francisco Bay Area and Sacramento over the past 30 years has resulted in the creation of major urban centers throughout the region.

Existing Conditions

Agricultural Land Use. Land uses in the San Joaquin River Region are predominantly open space in the mountain and foothill areas, and agricultural in the San Joaquin Valley area. Urban land use in 1990 totaled approximately 295,000 acres. Urban areas include the cities of Stockton, Modesto, Merced, and Tracy, as well as smaller communities such as Lodi, Galt, Madera, and Manteca. The western side of the region, south of Tracy, is sparsely populated. Small farming communities provide services for farms and ranches in the area, all relatively close to Interstate 5.

In 1994, excluding the legal Delta portion of San Joaquin County, about 4,750,000 acres of important farmland were mapped in the San Joaquin River Region.

Agricultural Water Use. About 40% of irrigation water sources in the San Joaquin River Region are from local water rights or local water projects. CVP project water provides 35% of total irrigation water uses, mostly to the Westlands Water District. The rest of the region's water is from the SWP and groundwater pumping.

Between 1985 and 1990, the average cost of surface water in this region is estimated at $20 to $85 per acre-foot, among the high end in California. The cost of groundwater is estimated at $30 to $80 per acre-foot, also among the high end in the state.

8.1.3.6 SWP and CVP Service Areas Outside the Central Valley

Historical Perspective. Between 1946 and 1950, in terms of irrigated acres, alfalfa and subtropical orchards were the most important crops in the region, accounting for 24% and 22% of the total irrigated acres, respectively. The next important crops in the region were truck crops, field crops, and grains, each accounting for about 15 to 20% of the total irrigated acres. Other crops grown in the region includedpasture and orchards. Over 90% of California subtropical orchards were grown in this region during the 1950 to 1964 period. Development in the region has steadily increased since the 1880s.

Existing Conditions

Agricultural Land Use. About 15% (377,500 acres) of the region's land is estimated to comprise agricultural land uses. Intensive agriculture is in the Santa Maria and lower Santa Ynez valleys; moderate levels of agricultural activity also occur near the South Coast area. Agricultural crops include grapes, vegetables, and truck crops, as well as a thriving flower seed industry. Total irrigated land in the area was about 145,000 acres in 1990.

The South Coast is the most urbanized region in all of California. Irrigated cropland accounts for about 288,000 acres of the region. The largest amount of irrigated agriculture is in Ventura County, where about 116,600 acres of cropland are cultivated, including vegetables, strawberries, citrus fruit, and avocados.

Agricultural Water Use. Outside the Central Valley, SWP water and groundwater each provide 40% of total irrigation water in the region. Local water provides the rest of total irrigation water uses.

Between 1985 and 1990, the average cost of surface water in this region is estimated at $15 to $255 per acre-foot, among the highest in California. The cost of groundwater is estimated at $80 to $120per acre-foot, also among the highest in the state.

8.1.4 Environmental Consequences: Agricultural Land and Water Use

8.1.4.1 Assessment Methods

Page 8.1-10. ***Table 8.1.1-2, "Irrigated Acres and Production Value in All Regions, 1986 to 1995," has been revised. A replacement table is provided.*** Agricultural land and water use impacts could occur in two main categories: direct and construction-related impacts; and indirect and operational impacts.

Direct impacts are those changes in physical land and water uses, or in land use designations, which result from construction of new facilities or conversion of lands from one use to another. For purposes of this analysis, direct impacts are those that would occur if any of alternatives, or combinations of alternatives, were implemented.

Indirect effects occur later in time and could be farther removed in distance. Indirect land use effects would be changes in broad land use policies, resources, or economies which could result from changes in land uses, or in the long-term availability of water resources. Potential indirect and operational impacts of the program include long-term changes in the number of acres in agricultural use.

As a Programmatic EIS/EIR, this assessment does not provide site-specific details or specific estimates of acreages potentially affected for a given alternative. Rather, potential increases or decreases in agricultural land uses by region are qualitatively estimated, or described with a range of gross acres. Given the level of detail appropriate for a Programmatic assessment, project-level information is not available. This, in turn, means that this document cannot detail agricultural impacts, or benefits, in other than region-level acreages.

ERP Water Use

A substantive issue has arisen regarding the use of water for the Ecosystem Restoration Program (ERP). The ERP includes objectives for restoration or creation of aquatic and riparian habitat, primarily in the Delta Region. Although CALFED will adopt mitigation procedures (Section 8.1.3.5 of the 3/16/98 Draft Programmatic EIS/EIR) to minimize the direct conversion of agricultural land for aquatic or riparian habitat restoration, agricultural land conversion is still expected to occur. A possible indirect effect of this conversion would be an increase in water use. This section describes the possible additional water supply needed to support restored aquatic or riparian habitat acreage and potential impacts on current water supply conditions.

/ and decrease in ag. water supply / reliability.

Methodology

requirement &

The amount of water needed to support a particular land use can be calculated as the amount of water that is supplied naturally by rainfall (soil moisture) and the water that must be applied for irrigation or to flood a wetland and supply evapotranspiration (ET) losses. ET requirements of crops or other types of vegetation are variable. DWR routinely uses a monthly water budget to estimate the ET and corresponding applied water requirements of specific crops, given assumed soil moisture parameters and a monthly rainfall sequence. However, for this programmatic impact assessment, only the approximate differences in annual water requirements between existing land use and habitat restoration use will be evaluated.

Open water evaporation in the Delta Region of the Central Valley is approximately 5 feet per year. Annual ET from crops is generally less than open water evaporation, although perennial crops such as alfalfa may have an annual ET that approaches open-water evaporation. For example, Figure 1 indicates that the ET rate of water applied to different crops ranges from less than 2 feet to more than 6 feet per year. Average crop ET for Delta lowlands and uplands is estimated by DWR to average

about 3 feet per year, with about 2 feet of applied water needed for ET (the remaining ET is supplied from rainfall).

Wetlands ET is generally considered to be about equal to open water evaporation. Riparian vegetation with access to shallow groundwater could also have an ET rate similar to that of open water evaporation. Very little of the ET requirements of aquatic habitat are supplied from rainfall, because rainfall occurs during periods when the water supply conditions are not limited. Therefore, as much as 3 acre-feet per year per acre of habitat of increased water supply may be needed if agricultural land is converted to aquatic or riparian habitats (5 feet of evaporation required by aquatic habitats minus 2 feet of applied water ET required for crops). Where land is in crops that use more than 2 feet of applied water for ET (such as alfalfa or pasture), the water supply impacts of conversion to aquatic or riparian habitat will be less than 3 acre-feet per acre. However, where the existing land use is natural vegetation, the water supply impacts would be higher (5 acre-feet per acre) because existing applied water use would be zero.

Table 1 provides an estimate of the acreage of habitat restoration in each of four geographic regions being proposed as part of the Ecosystem Restoration Program. This table was used to estimate impacts on water supply. Actual water supply impacts due to additional ET water use by restored habitat lands will depend on monthly water supply conditions. If excess water is flowing from the Delta to the Bay, no impacts on water supply diversions or exports would occur. Water supply impacts in wet years will be low, because excess water supply conditions usually exist in many months during wet years. However, potential water supply impacts will likely occur in dry years, because riparian and aquatic habitats use water even in dry years. These potential water supply impacts can be minimized by carefully selecting the areas for habitat restoration to control the amount of additional water supply needed to maintain the aquatic or riparian habitat or by reducing the acreage of flooded seasonal wetlands in dry years.

Potential Impacts

Habitat restoration in the Bay Region has a low potential to impact water supply because water from the Bay, which would be used to maintain the restored habitat, is not otherwise used for water supply. The additional ET resulting from conversion of land to tidal or non-tidal wetlands would not cause any decrease in freshwater supplies.

Habitat restoration in the Delta Region has a higher potential to affect water supply because some aquatic habitats use more water for ET than current agricultural land uses. Shoal and mid-channel island habitat restoration will not require additional water, and neither will perennial grasslands, which are assumed to be sustained by natural rainfall. Seasonal wetlands, on lands which will continue agricultural practices, generally use water in the fall and winter seasons when evaporation is relatively low, so the water requirements for flooding these areas may be less (1 or 2 acre-feet per acre) than for other aquatic habitats. The 30,000 acres of seasonal wetland restoration targeted in Table 1 for the Delta Region could, therefore, require 30,000 to 60,000 acre-feet of additional water.

The remaining aquatic and riparian habitat restoration targets from Table 1 for the Delta Region total between 55,600 and 73,600 acres. If we assume this habitat is developed on agricultural land, as much as 3 acre-feet per year per acre (5 acre-feet per year for wetlands minus 2 acre-feet per year already applied for agricultural purposes) will be needed. Therefore, a maximum of between 166,800 and 220,800 acre-feet of additional water supply could be needed in the Delta Region for tidal and non-tidal habitat restoration. The maximum potential additional water use for Delta Region habitat

restoration could, therefore, be 196,800 to 280,800 acre-feet. However, some of the tidal habitat restoration identified in Table 1 involves dredging or filling existing open-water habitat to create shallow-water or slough habitat, which will not have any water supply impacts, because the restored habitat is already open water.

Habitat restoration in the Sacramento River and San Joaquin River Regions may not require as much additional water per acre of habitat as the Delta Region, because much of the flood plain and meander corridor vegetation would be sustained by soil moisture and shallow groundwater storage resulting from rainfall and storm flows. Because current agricultural water use is likely to be similar to the additional riparian water supply needed to sustain riparian corridor habitat restoration efforts, relatively small water supply impacts will likely result from these restoration activities. However, if riparian habitat is restored from natural areas not fully supporting riparian habitat, a water supply impact of perhaps 2 acre-feet per acre of riparian habitat might result. If all of the targeted 39,800 acres of riparian restoration were created from these types of natural vegetation lands, a maximum of 79,600 acre-feet of additional water would be required in the Sacramento River and San Joaquin River Regions.

Net on/off volume of water, net security of supply x

Mitigation Strategy

The agricultural land and water use mitigation strategies suggested in Section 8.1.3.5 of the Draft Programmatic EIS/EIR should be effective in reducing the additional water supply impacts that could potentially accompany habitat restoration efforts. Another mitigation strategy could be to include an implementation objective to the Ecosystem Restoration Program to limit the amount of additional water supply required to sustain habitat restoration acreage. As each habitat restoration action is implemented, potential (maximum dry year) water supply impacts could be estimated and a cumulative water supply impact account maintained. The water supply for seasonal (flooded) wetlands should be reduced in dry years to reduce the water supply impacts on other water users.

8.1.4.2 Significance Criteria

The following impacts would have potentially significant agricultural land or water use effects:

- Permanent or long-term reduction in agricultural acreage within a region or the conversion of any lands categorized as prime, statewide importance or unique farmlands;
- Adversely affects an agricultural resource or operation (for example, impacts to soils or farmlands, or impacts from incompatible land uses);
- Any increase in groundwater pumping that would cause or exacerbate overdraft of a basin;
- Changes in surface water use which lead to irreversible impairment of agricultural productivity;
- Inconsistency with agricultural objectives of local, regional, and state plans;
- Conflicts with applicable environmental plans or policies adopted by agencies with jurisdiction over the project; or
- Conflicts with general plan designations or zoning.

8.1.4.3 Comparison of No Action Alternative to Existing Conditions

Under the No Action Alternative, impacts to agricultural lands and associated irrigation water will be substantial. Additional agricultural impacts are anticipated from urbanization of agricultural lands as Central Valley towns and cities grow in population. Projections have estimated that the loss of agricultural lands due to urbanization will be from 500,000 to one million acres over the next 40 years. The rate of agricultural land conversion over the last two years (for lands on which IFL maps are maintained) exceeds even that rate. Also, a number of projects being carried out or proposed independent of the CALFED program will cause agricultural land conversions, including the Stone Lakes National Wildlife Refuge, the North Delta National Wildlife Refuge, and the Yolo Basin Wildlife Area. Together, the three wildlife area proposals could convert over 20,000 acres of agricultural land to wildlife uses. Specific agricultural land use impacts (versus impacts to open space or municipal and industrial lands) would depend upon the actual location of the modifications and improvements to be implemented under the No Action Alternative.

up to 33,000 ac alone 36,000 ac in ag. ✓

In addition, under the No Action Alternative, it is estimated that about 45,000 acres of drainage problem lands in the San Joaquin River Region will be retired by year 2020. Also under No Project, DWR estimates that levee failures in the Delta Region will result in continued, and even accelerated, flooding of tracts that are currently in agricultural use. Further, it is likely that water currently being used for irrigation purposes would be diverted to provide protection for currently-endangered species. While the exact amount of this water loss cannot be quantified, due to varying habitat demands and the recovery or decline of the species involved, it could become significant. The significance of this water loss to agriculture would be magnified by the lack of any additional water efficiency, surface storage or conjunctive use programs.

Table 8.1.3-1 of the 3/16/98 Draft Programmatic EIS/EIR summarizes the agricultural water use in the Central Valley before and after water was reallocated according to the CVPIA. This table illustrates how changes in surface water delivery correspond to changes in groundwater pumping. The estimates indicate that part of any change in surface water delivery is likely to be offset by a change in groundwater use. The degree of replacement depends on the relative cost of groundwater and surface water, and on the relative cost and benefit of other potential adjustments (for example, changing the amount of acreage irrigated or changing irrigation methods).

8.1.4.4 Comparison of Program Alternatives to No Action Alternatives

8.1.4.4.1 Preferred Program Alternative

Program-Wide

Conversion of prime, statewide important or unique farmland to other uses would conflict with many local or regional agricultural land use plans or policies, which would result in a significant impact. For example, agricultural policies in the five Delta county General Plans contain the following statements:

- Yolo- "*It is the policy of Yolo County to vigorously conserve and preserve the agricultural lands in Yolo County. Yolo County shall protect and conserve agricultural land use especially in areas presently farmed or having prime agricultural soils and outside of existing planned urban communities and outside of city limits. Nonagricultural land use activities are prohibited from agriculturally designated areas in Yolo County*".

- Solano- *"Preserve and maintain essential agricultural lands including intensive agricultural areas comprised of high quality soils and irrigated lands and extensive agricultural areas with unique or significant dryland farming or grazing activities".*
- Sacramento- *"The County shall balance the protection of prime farmlands and farmlands with intensive agricultural investments with the preservation of natural habitat realized by the establishment of environmental mitigation banks and sites, wildlife refuges and other natural resource preserves so as to protect farmland and to conserve associated habitat values".*
- San Joaquin- *"Agricultural areas shall be principally used for crop production, ranching and grazing".*
- Contra Costa- *"To conserve prime agricultural land outside the Urban Limit Line exclusively for agriculture".*

The specific locations of projects have not been identified for this programmatic-level analysis. However, it is likely that lands designated for agriculture in county and city general plans would be used instead for storage, conveyance, habitat and levee purposes. Thus, inconsistency with these plans would result in a significant adverse land use impact.

It is also likely that a substantial amount of the agricultural land that the various CALFED programs could convert will be enrolled in the California Land Conservation Act, known as the Williamson Act. Under the Williamson Act, landowners contract with their city or county to keep lands in farming or open space, for a minimum of ten years. In return, the landowner receives a reduction in property taxes. The state makes subvention payments to local governments with Williamson Act contracts, to defray a portion of the forgone property taxes. State or local agencies acquiring Williamson Act lands are required to notify the Department of Conservation beforehand, and in the case of prime farmlands, to make findings that there is no other non-contracted land which is feasible for the use. These findings are not, however required for fish and wildlife enhancement projects or flood control projects, which are defined in the Act as compatible with agricultural preserves. Also exempted from this requirement are projects designated as State Water Facilities. While the conversion of agricultural lands enrolled in the Williamson Act is often used as an indicator of significance, projects from both the Ecosystem Restoration Program and the Levee Protection Program would likely be compatible with the Act's purposes. Williamson Act lands may be acquired for other program purposes, such as Storage and Conveyance, but their loss is already considered significant pursuant to the discussion earlier in this section.

Delta Region

Ecosystem Restoration. The Ecosystem Restoration Program involves conversion of land in the Delta Region to habitat and ecosystem restoration, levee setbacks, and floodways. In general, agriculture is the dominant land use on the nonconveyance side of levee structures in the Delta. The Ecosystem Restoration Program could convert up to 111,000 acres of important farmland. Some of these agricultural uses may be shifted to the Central Valley or elsewhere; however, this is a significant and unavoidable adverse impact on agricultural land use.

Habitat restoration in the Delta Region has a higher potential to affect water supply because some aquatic habitats use more water for ET than current agricultural land uses. Shoal and mid-channel island habitat restoration would not require additional water, and neither would perennial grasslands, which were assumed to be sustained by natural rainfall. Seasonal wetlands, on lands that will continue agricultural practices, generally use water in fall and winter when evaporation is relatively low; therefore, the water requirements for flooding these areas may be less (1 or 2 acre-feet per acre) than for other aquatic habitats. The 30,000 acres of seasonal wetland restoration targeted for the Delta Region therefore could require 30,000-60,000 acre-feet of additional water (***see Table 1 in the Supplement to the Main Document***).

The remaining aquatic and riparian habitat restoration targets from ***Table 1 in the Supplement to the Main Document*** for the Delta Region total between 55,600 and 73,600 acres. If we assume that all this habitat is is developed on existing agricultural land, as much as 3 acre-feet per year per acre (5 acre-feet per year for wetlands minus 2 acre-feet per year for agricultural land) would be needed. Therefore, a maximum of between 166,800 and 220,800 acre-feet of additional water supply could be needed in the Delta Region for tidal and non-tidal habitat restoration. The maximum potential additional water usefor Delta Region habitat restoration therefore could range from 196,800 to 280,800 acre-feet. However, some of the tidal habitat restoration identified in ***Table 1 in the Supplement to the Main Document*** would involve dredging or filling existing open-water habitat to create shallow-water or slough habitat, which would not affect water supply because the restored habitat already is open water.

Impacts on other water users cannot be determined until the location and other specific details of the habitat restoration are known.

✓ water rights w/ land converted - ↓ in WSR 70kac ?

Water Quality. The long-term benefits of the Water Quality Program include improved water quality conditions relative to the No Action Alternative. Increased water quality to agricultural users would bea beneficial impact compared to the No Action Alternative. Because it is anticipated that up to 45,000 acres of land in the Grasslands Subarea of the San Joaquin Valley Region with drainage problems would be retired under the No Project Alternative, the land retirement under theCALFED programs would not be a significant impact compared to the No Action Alternative. ? 70,000 ac ?

Water Use Efficiency. The Water Use Efficiency Program is not anticipated to directly affect land use. However, the program may indirectly affect agricultural land use. Agricultural land may be removed from irrigated production because of increased costs and decreased profitability, which could result from required efficiency improvements or increased district water charges (for example, as part of tiered water pricing). Also, production may be switched to lower-water-use crops, with lesser economic value. While either of these actions could result in economic impacts, they would not permanently eliminate the ability of those lands to be farmed in the future, should conditions allow. Conversely, improved efficiency may allow the continued viability of agriculture in some areas. Efficiency improvements that result ingreater water supply reliability but also higher annual cost may cause a shift in the types of crops grown. A shift to high-value crops may lead to a hardening of water demand. Idling of irrigated agricultural lands, or their use in lower-value crops, is a potentially significant adverse economic impact. Improvement in the long-term viability of some agricultural lands is a potentially beneficial impact compared to the No Action Alternative.

Levee System Integrity. Levee system integrity measures could affect up to 35,000 acres of land in the Delta, most of which probably would be important agricultural land. The specific locations of lands that would be affected by the Preferred Program Alternative are not known at this time. The Levee System Integrity Program would primarily affect agricultural land uses in the Delta Region and would not directly affect land uses in the other four regions. Again, protection of flood-threatened agricultural lands due to levee improvements would be a potentially beneficial impact compared to the No Action Alternative.

No agricultural land loss is anticipated in the Suisun Marsh as a result of levee modification activities. The greatest land loss would be to seasonal wetlands adjacent to the interior portion of the levee.

Water Transfers. The Water Transfer Program ~~would~~ could affect land use economics primarily through changes in agricultural, open space, habitat, and developed land use. In addition to the source of water for a transfer, the timing, magnitude, and pathway of each transfer substantially affect the potentialfor significant impacts. The water source varies according to the water transfer category: crop fallowing (surface water or groundwater), shifting to a crop with a lower water demand (surface water or groundwater), groundwater

substitution for surface water (surface water), direct groundwater transfers (groundwater), conserved water (surface water or groundwater), and stored water in reservoirs (surface water).

Potentially significant beneficial impacts are associated with the transferred water's destination and include: (1) increasing agricultural acreage in areas with limited water supplies; and (2) increasing habitat acreage in areas with limited water supplies.

Potential adverse impacts associated with the transferred water include: (1) decreasing agricultural acreage due to crop fallowing; (2) decreasing agricultural acreage due to increased costs resulting from direct groundwater or groundwater replacement transfers; (3) causing land use changes that could be inconsistent with local agricultural objectives; and (4) decreasing habitat acreage.

Water transfers are not expected to directly affect land use; however, they could indirectly affect agricultural opportunities by changing the availability of water in selling and receiving areas. Transfers could result in potentially significant adverse economic impacts due to temporary or longer-term reduction in cropped lands.

Storage and Conveyance

Storage. Significant and unavoidable adverse impacts on existing land uses could result in land conversions associated with new or expanded surface storage. Specific land use impacts would depend on the location of the new storage facility. For this programmatic analysis, it was assumed that the most-likely new reservoir sites would be in the foothills rather than in flat, valley-bottom areas where agricultural land uses would occur. Therefore, storage elements likely would affect less productive agricultural lands, such as grazing lands, and not the better farmland generally found on the valley floor. The Preferred Program Alternative does, however, include the possibility of in-Delta storage, which would have significant adverse affects to Delta Region agricultural lands. Up to 15,000 acres of Delta agricultural lands could be affected by this element of the Preferred Program Alternative. Potentially, water supplies available from new storage facilities could be used for agricultural purposes, which would be a beneficial impact.

Conveyance. Channel widening could require conversion of up to 4,900 acres of agricultural land. Adverse land use impacts of the modifications would be significant. To the extent that dredging reduces the amount of land that setback levees require, dredging could result in a lesser impact than the setback levees. If dredged spoils are disposed of on agricultural lands, an adverse impact could result by placing lower-quality materials over prime, statewide important or unique farmland.

The Preferred Program Alternative relies on a staged-decision method of determining if additional program features are required. Thus, it is not certain that some features, including the isolated conveyance facility, would be built under the PPA. However, using the highest-buildout scenario under the PPA, creating an open-channel isolated conveyance in the dual Delta conveyance contingent strategy would result in a significant adverse land use impact from permanent conversion of up to 5,500 acres of important farmland.

OK ✓ for Delta Region

Changes in operations to protect fishery resources ~~are not anticipated to~~ may or may not adversely affect agricultural land and water use. Water supply ~~is not expected to~~ may or may not be affected in these regions; therefore, agricultural land and water use resources would not be significantly affected. no change

Bay Region

The compatibility and consistency of potential actions with land use plans is not evaluated in this programmatic-level analysis. However, inconsistency between applicable Preferred Program Alternative

elements with existing area city and county land use plans could result in a significant adverse land use impact.

Potential land use impacts on important agricultural land in the Bay Region are anticipated to be minimal and have not been quantified.

Agricultural water users in the Bay Region could receive some of the additional water supply developed by the Preferred Program Alternative.

Habitat restoration in the Bay Region has a low potential to affect water supply because water from the Bay, which would be used to maintain the restored habitat, is not otherwise used for water supply. The additional ET resulting from conversion of land to tidal or non-tidal wetlands would not cause any decrease in freshwater supplies.

Changes in operations to protect fishery resources are not anticipated to adversely affect agricultural land and water use. Water supply is not expected to be affected in these regions; therefore, agricultural land and water use resources would not be significantly affected.

Sacramento River and San Joaquin River Regions

Ecosystem Restoration. The Ecosystem Restoration Program could convert up to 34,000 acres of important farmland, primarily on the east side of the valley and the valley trough in the Sacramento Valley and up to 5,800 acres of important farmland, primarily east of the San Joaquin River in the San Joaquin River Region.

Habitat restoration in the Sacramento River and San Joaquin River Regions may not require as much additional water per acre of habitat as the Delta Region, because much of the floodplain and meander corridor vegetation would be sustained by soil moisture and shallow groundwater storage resulting from rainfall and storm flows. Because current agricultural water use is likely to be similar to the additional riparian water supply needed to sustain riparian corridor habitat restoration efforts, relatively small water supply impacts likely would result from these restoration activities. However, if riparian habitat is restored from natural areas not fully supporting riparian habitat, a water supply impact of perhaps 2 acre-feet per acre of riparian habitat might result. If all of the potential 39,800 acres of riparian restoration were created from these types of natural vegetation lands, which is unlikely, a maximum of 79,600 acre-feet of additional water would be required in the Sacramento River and San Joaquin River Regions.

70,000 ? (CVPIA)

Water Quality. As proposed in the Water Quality Program, approximately 35,000-45,000 acres of agricultural land with water quality problems (for example, the presence of selenium) may be idled in the Grasslands Subarea of the San Joaquin River Region as a measure to improve water quality in the region and in the Delta. The exact location of these lands and, consequently, the types of crops that would be idled are not known. Therefore, the Water Quality Program could affect up to 45,000 acres of agricultural land, possibly including prime, statewide important and unique farmland.

Again, the location and mix of crops that would be retired as part of the Water Quality Program is not definable at the Programmatic level. But assuming an average of 3 acre-feet of applied water per crop acre and a maximum of 45,000 acres of drainage problem lands idled, approximately 135,000 acre-feet of water would not be applied. As discussed for the Delta Region, this reduction in applied water does not necessarily equate to new water. Some of this water would likely be recoverable in the San Joaquin River Region by downstream or in-basin users.

Water Use Efficiency. Potential Water Use Efficiency Program impacts would be similar to those discussed for the Delta Region.

Water Transfers. Potential Water Transfer Program impacts would be similar to those discussed for the Delta Region.

Coordinated Watershed Management. Potential watershed activities in the Sacramento River and San Joaquin River Regions would be compatible with applicable agricultural land use plans and policies in their affected jurisdictions. Reduced grazing activities in the watershed could result in potentially substantial economic impacts in these regions if they result in a loss of agricultural productivity.

Storage and Conveyance. Storage facilities could result in conversion of agricultural land in the foothill or mountain areas, a potentially significant and unavoidable adverse impact. Development of storage facilities also could conflict with local and regional plans regarding agricultural lands. Between 18,000 and 32,000 acres of agricultural land, which could be classified as Locally Important or Grazing lands, could be affected by the program storage elements. Because storage facility locations have not been selected, the amount of important farmland affected is not known and would be determined in project-specific environmental documentation.

Because potential storage sites are primarily in the foothills and would affect dryland crops and grasslands that rely on rainfall, applied water has not been estimated.

Agricultural water users in the Sacramento River and San Joaquin River Region could receive some of the additional water supply developed by the Preferred Program Alternative. However, the cost and availability of water from new storage and conveyance facilities will depend on the alternative selected, the location of facilities proposed, and amount of new water from each of these facilities. Neither a cost analysis nor a willingness-to-pay study have been completed. Consequently, the allocation of new water by region is uncertain.

Groundwater storage projects in these Regions could impact adjacent agricultural operations. Particularly in dry years, groundwater level declines could occur as a result of overpumping in storage facilities. In extreme cases, the use of wells on adjacent or nearby properties could be lost due to adverse groundwater quality or lower groundwater levels. Temporary loss of groundwater availability, or increased pumping costs could have adverse economic impacts on neighboring agricultural lands. Groundwater storage facilities could also provide a beneficial impact to neighboring agricultural operations, by ensuring that adequate supplies of groundwater are available, and by reducing pumping costs in most years as groundwater levels stay higher.

Changes in operations to protect fishery resources are not anticipated to adversely affect agricultural land and water use in the Sacramento River Region. Water supply is not expected to be affected in the Sacramento River Region; therefore, agricultural land and water use resources would not be significantly affected.

Yes. Changes in operations to protect fishery resources may affect agricultural land and water use in the San Joaquin River Region. Any reductions in water supply caused by changes in the amount of water exported to the San Joaquin River Region could result in an adverse impact that could be significant, depending on the magnitude of the reduction. Any increases in water supply caused by changes in the amount of water exported to the region could result in a beneficial impact that could be significant, depending on the magnitude of the increase.

SWP and CVP Service Areas Outside the Central Valley

Potential direct impacts on agricultural land in the SWP and CVP Service Areas Outside the Central Valley are anticipated to be minimal and have not been quantified.

Agricultural water users in the region could receive some of the additional water supply developed by the Preferred Program Alternative.

Water Use Efficiency. Indirect changes in land use may result from the Water Use Efficiency Program. In some instances, agricultural land may be removed from production because of increased costs and decreased profitability, which could result from required efficiency improvements or increased district water charges (for example, as part of tiered water pricing). Conversely, improved efficiency may allow the continued viability of agriculture in some areas. This will tend to maintain the existing uses of agricultural lands in some regions and reduce the amount that may go out of production or become urbanized. Efficiency improvements that result in greater water supply reliability but also higher annual cost may cause a shift in the types of crops grown. Temporary or longer-term idling of crop lands could result in adverse economic impacts. Improvement in the long-term viability of some agricultural lands would be a potential beneficial Changes in operations to protect fishery resources may affect agricultural land and water use. Any reductions in water supply caused by changes in the amount of water exported to this region could result in an adverse impact that could be significant, depending on the magnitude of the reduction. Any increases in water supply caused by changes in the amount of water exported to this region could result in a beneficial impact that could be significant, depending on the magnitude of the increase.

8.1.4.4.2 Alternative 1

Impacts from Alternative 1 would be similar to those from the Preferred Program Alternative. Because Alternative 1 does not, however, include an isolated conveyance facility, the amount of agricultural lands converted would be somewhat less than the PPA, but still significant. Also, Ecosystem Restoration efforts would focus more on the North and West Delta, with less emphasis on the South Delata.

8.1.4.4.3 Alternative 2

Alternative 2 impacts to agriculture differ from the PPA by including bothan isolated conveyance facility and setback levees on the N. Fork Mokelumne River, rather than including these actions as performance-dependent options for Phase III. Under this Alternative, agricultural lands in the construction footprint of the isolated conveyance facility and those immediately adjacent to the N. Fork Mokelumne River would be converted for conveyance uses.

8.1.4.4.4 Alternative 3

Impacts to agriculture from Alternative 3 would be similar to Alternative 2, with the difference of levee setbacks being constructed on the S. Fork of the Mokelumne River rather than N. Fork Mokelumne.

8.1.4.5 Comparison of Program Alternatives to Existing Conditions

8.1.4.5.1 Preferred Program Alternative

Comparison of the Preferred Program Alternative to existing conditions indicates that:

- All significant adverse impacts identified when making a comparison to the No Action Alternative would still be significant when compared to existing conditions.

- CALFED is proposing actions for levee protection, storage and conveyance, and ecosystem restoration, which could result in additional large-scale land conversions affecting agricultural lands, particularly in the Delta. Compared to existing conditions, the loss of important agricultural lands would be a significant impact. Because the No Action Alternative would also involve loss of existing agricultural lands, the impact when compared to current conditions is greater.

- The water supply reliability actions from the Water Use Efficiency, Water Quality, and Storage and Conveyance programs could improve the availability and quality of water for agricultural purposes above the existing conditions baseline. While CALFED is expecting an overall improvement in water supply reliability for agriculture relative to the No Action Alternative, there is still the potential that the benefits provided by the Preferred Program Alternative could be diminished by unforeseen future conditions such as extended drought. Consequently, while the benefits of the alternatives were analyzed using reasonable approximations of future conditions, it should be acknowledged that water supply reliability could be worse than currently exists.

- The conclusions regarding the significance of project effects on surface water quality when compared to existing conditions would be similar to those compared to No Action.

8.1.4.5.2 Alternative 1

Impacts from Alternative 1 over Current Conditions are similar to those described for the Preferred Program Alternative. Because Alternative 1 does not include the possibility of an isolated conveyance facility, the amount of agricultural lands converted due to this use would be from 4,000-5,500 acres less than the PPA.

81.4.5.3 Alternative 2

Alternative 2 impacts to agriculture over Current Conditions are similar to the PPA, but differ by including both an isolated conveyance facility and setback levees on the N. Fork Mokelumne River as programelements, rather than including these actions as options for Phase III. Agricultural lands in the construction footprint of the isolated conveyance facility and those immediately adjacent to the N. Fork Mokelumne River would be converted as part of this Alternative.

8.1.4.5.4 Alternative 3

Impacts to agriculture from Alternative 3 over Current Conditions would be similar to Alternative 2, with the change of levee setbacks on the S. Fork of the Mokelumne River rather than N. Fork Mokelumne.

8.1.4.6 Cumulative Impacts

A long-term trend within the project area has been conversion of agricultural lands to other, primarily urban, uses. As an example, between 1994 and 1996, the five Delta counties suffered a loss of 12,288 acres of prime statewide important and unique agricultural lands. Practically all this loss occurred as a result of urbanization of farmlands in and near cities in the five-county area. During this same two-year period, 14,689 acres of agricultural lands in those five counties were committed, largely through the planning process, to future urbanization and non-agricultural uses. Statewide, between 1994 and 1996, over 115,000 acres of agricultural lands in these categories (for areas covered by the Department of Conservation's Important Farmland Map Series) have been converted, mostly to urban uses. Mitigating these losses to some extent is the creation of new agricultural lands, in particular the creation of new Unique farmlands through the planting of grape vines in foothill and valley terrace areas. Urbanization of farmlands is expected to continue into the foreseeable future. Population projections for the year 2020 show California's population at 47.5 million, a substantial increase over the 1995 level of 32.1 million.

One study found that population in the Central Valley is expected to triple by 2040, putting tremendous pressure on agricultural lands. It concluded that low-density urban development could consume more than 1 million acres of farmland by that date. Even if more-compact urban development occurred, over 474,000 acres of farmlands would still be converted to urban uses (AFT Summary Report, 1995). Another study that projected land use patterns based on population growth found that an additional 331,530 acres of urbanized land would be required (a 37% increase by the year 2005) if full development in the 12-county Bay-Delta Region occurred, including impacting 39,511 acres of mostly-farmed wetlands in the Delta (ABAG 1992).

Also, other water-related initiatives that are not part of the CALFED program, such as CVPIA, have reduced water availability to agriculture, potentially idling croplands or forcing a change to lower-value crops. In addition, wildlife projects outside of or only partially within the CALFED program, including the Yolo Basin Wildlife Area, the Stone Lakes National Wildlife Refuge and the proposed North Delta National Wildlife Refuge, would have the potential to convert over 20,000 additional acres of prime, statewide important or unique agricultural lands from production.

While many would argue that conversion of agricultural lands to habitat or other non-urban uses is preferable to agricultural loss from urbanization, the cumulative impact to agriculture in the project area, from the CALFED program and other causes, is significant. The maximum foreseeable loss over the 30-year span of the CALFED program would total 253,000 acres of important farmlands converted to program uses. All the CALFED program alternatives would contribute to the trend of agricultural land conversion, by creating wildlife habitat, larger levees and water storage and conveyance facilities on currently-existing agricultural lands.

water cum. impacts ind. mit for urban

8.1.4.7 Growth-Inducing Impacts

An outcome of all the program alternatives is to provide better-quality municipal water, in sufficient quantities to accommodate projected population growth. As this growth occurs, much, if not most, of the housing, business and infrastructure necessary to support additional population will be built on existing agricultural lands. To the extent that the water quality and quantity supplied by the program allow this growth to occur, the program could be considered to be growth-inducing. Also, increased prices for agricultural water could make continued farm production marginal in some areas, as could the opportunity to transfer water elsewhere. The result from either of these cases could be an increased desire on the part of a landowner to sell property for urban uses. In localized areas, this could also be considered a growth-inducing impact of the program.

8.1.4.8 Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

Long term productivity of agricultural lands used for levee, conveyance or habitat purposes by the program will be lost to agricultural production. Also, some agricultural lands may be adversely affected by construction impacts in the short term. Many of the features within the program, however, will enhance the long-term productivity of other agricultural lands in the state. Increases in irrigation water quality, in water supply reliability and protection from levee failure will tend to increase the productivity of farmlands in the project area.

8.1.4.9 Irreversible and Irretrievable Commitments of Resources

All program alternatives would directly and indirectly convert prime, statewide important and unique agricultural lands to conveyance, storage, levee and habitat uses. This is an irreversible and irretrievable commitment of these resources.

8.1.4.10 Mitigation Strategies

- i.e. new water supply for habitat proj. ✓
→ CF mit. policy statement - before implementation

Avoidance or minimization strategies could include: - Bundle habitat proj. w/ WSP proj. ✓
- create ag WSR account ✓

- Developing assurance measures to increase water supply reliability to agriculture, such as providing long-term water supply contracts.
- Providing funding to the Agricultural Land Stewardship Program to purchase easements on equivalent-quality agricultural land to prevent its conversion to urbanized uses and increase farm viability.
- Siting and aligning program features to avoid or minimize impacts on agriculture.
- Examining structural and nonstructural alternatives to achieving project goals without affecting agricultural land.
- Implementing features that are consistent with local and regional land use plans.
- Involving all affected parties, especially landowners and local communities, in developing appropriate configurations to achieve the optimal balance between resource impacts and benefits.
- Providing irrigation water to areas with prime or other high-quality agricultural soils, but currently lacking water availability.
- Providing funding, infrastructure and expertise to landowners interested in establishing higher-value crops.
- Keeping water allocations from retired drainage-impaired lands within the existing Water Districts.
- Providing advance notice of operational changes for water deliveries, so that cropping decisions can be made with adequate information.

Some examples of Ecosystem Restoration Program avoidance or minimization measures are:

- Restoring existing degraded habitat first.
- Focusing habitat restoration efforts first on developing new habitat on public lands.
- Absent public lands, focusing restoration efforts on acquiring lands from willing sellers where at least part of the reason to sell is an economic hardship, that is, land that floods frequently or the levees are too expensive to maintain.
- Using farmer-initiated restoration projects as a means of reaching program goals. Reduce or remove regulatory barriers to farmer-initiated and -developed restoration and conservation projects
- Where small parcels of land need to be acquired for waterside habitat, seeking out points of land on islands where the ratio of levee miles to acres farmed is high.
- Obtaining easements on existing agricultural land that would allow for minor changes in agricultural practices (such as flooding rice fields after harvest), thus increasing the value of the agricultural crop(s) to wildlife.
- Including provisions in floodplain restoration efforts for continued agricultural practices on an annual basis.
- Purchasing water acquired for habitat purposes under temporary or rotating contracts so that the same land or locality is not affected every year.
- Using a planned or phased habitat development approach in concert with adaptive management.
- Including an implementation objective to the Ecosystem Restoration Program to limit the amount of additional water supply required to sustain habitat restoration acreage.

Some examples of avoidance and minimization measures from the Levee System Integrity Program include:

- In implementing levee reconstruction measures, working with landowners to establish levee reconstruction methods that avoid or minimize the use of agricultural land.
- When planning subsidence control measures, working with landowners to establish BMPs that avoid or minimize changing land use practices while protecting levees from the effects of subsidence. Through adaptive management, modifying BMPs to further reduce impacts on agricultural land.
- Implementing erosion control measures to the extent possible during and after project construction activities. These erosion control measures can include grading the site to avoid acceleration and concentration of overland flows, using silt fences or hay bales to trap sediment, and revegetating areas with native riparian plants and wet meadow grasses.
- Protecting exposed soils with mulches, geotextiles, and vegetative ground covers to the extent possible during and after project construction activities to minimize soil loss.
- Scheduling construction activities so that current crops may be harvested prior to construction initiation.

- Developing agricultural infrastructure, buffers, and other tangible support for remaining agricultural lands. These buffers should have vegetation compatible with farming and habitat objectives.

- Providing the CALFED benefits of water supply reliability to agricultural water users on an equitable basis considering the nature and extent of impacts on agricultural resources, including land and water.

8.1.4.11 Potentially Significant Unavoidable Impacts

Program actions associated with the Ecosystem Restoration, Levee System Integrity, Water Quality, and Storage and Conveyance components would convert up to a maximum of 253,000 acres of existing prime, statewide important and unique farmlands to program uses. The loss of agricultural lands in these categories is not fully mitigable, and would be considered significant.

Associated ↓ in ag water supply reliab & the remaining supply resulting fr water rights changes would also decrease, since most of the ~~water~~ converted would have riparian, pre-1914 or exchange water rights & like remaining land would have senior right provided under contract ✓ → could be up to a max of 759 TAF

monitoring program –